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The chimpanzees of Oluwa Forest Reserve, southwest Nigeria

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Abstract

The lack of accurate information on the population of chimpanzees (*Pan troglodytes*) is a cause for concern on their conservation and management in Southwest Nigeria. We conducted surveys on the chimpanzees of Oluwa Forest Reserve, Ondo State between the month of September 2011 and February 2012. We used the combination of recce z mHvlHO Hu i xx voHwHmmzu vmKp u xi v mm Hwki ww HvHpmmzm mz mHChimpanzee distribution was confined to the central portion of the OA2 axis of the reserve. This portion is approximately 39.22km^2 representing 5.78% of the total size of the original area of the reserve. Four sightings of Chimpanzee groups were achieved with an average of 9.50 ± 1.55 individuals observed. We observed nests built on rock platforms. The numbers of tree nests observed at sleeping sites were usually fewer than the number of animals seen, indicating that not all of them build nest on trees at their nesting sites. These observations were new in nesting behavior of chimpanzees across Nigeria and it is postulated to be on account of insecurity and deprivation of essential material necessary for nesting in their night sleeping sites. We explained this on the conceptual frame work of psycho-infrastructuralism model.

Keywords: Chimpanzees, Southwest Nigeria, Insecurity and deprivation, Exceptional site

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1. Introduction

The populations of Chimpanzee (*Pan troglodytes*) are extremely depleted in Nigeria (Oates et al., 2003) and particularly in Southwestern Nigeria (Ogunjemite et al., 2006: Greengrass, 2009). While this decline by itself is alarming, it merits additional concerns because, more than any other species, chimpanzees closely resemble humans genetically, behaviorally, and physically, and thus, provide an important link to man evolutionary history (Kormos and Boesch, 2003) and there were not many detailed studies of the animal in the region. Moreover, the aniu i tHi xxmi z H wHj mHx voH xH wu mH zi vomHj mpi wz H vHzm x w mH wH pmH m zmu mHkwl wH pm H zmHi k voH vH pmzH mx tmml Hzi vomH vH pmH Region HKp u xi v mHpi l Hj mv Hzm x wz ml H nesting on the palm tree in Buru Forest in Taraba State (Ogunjemite and Ashimi, 2008; Ogunjemite, 2010). Chimpanzees were also known to be discrete in the selection of their nesting sites across it ranges in Nigeria; it is found mostly in rugged steep inaccessible terrains (Ogunjemite and Oates, 2007; Ogunjemite and Ashimi, 2011)

Hunting for bushmeat and rituals, commercial logging, the conversion of forest to agricultural land for cash crops and subsistence farming, climate change and habitat fragmentation were identified as threats to the Chimpanzee in most of its ranges in Southwest Nigeria (Agbelusi et al., 2000; Person and Werner, 2003; Ogunjemite, 2004; Ogunjemite and Oates, 2007; Ogunjemite, 2009). Progressive habitat loss often leaves small and unconnected patches in which chimpanzee populations are isolated and at risk from chance demographic factors (Renner, 2004; Greengrass and Ogunjemite, 2008). This has increased their vulnerability to human predation and they constantly device means of coping in such a situation. This condition is assuming serious dimension posing great challenges to the survival of chimpanzees in Oluwa forest leading to state of almost total deprivation on population in the forest. These challenges faced by the population in the Forest Reserve, which is a major component of Omo Forest Cluster adjudged as one of the exceptional sites for chimpanzee conservation in Southwest Nigeria (Morgan et al., 2011) informed the present survey.

2. Methodology

2.1. Study area

The study was conducted in Oluwa Forest Reserve, Figure 1(6° 55' 7° 20' N and 3° 45' 4°32' E) with an area of 678.06km^2 (Ogunjemite et al., 2006). Most rivers and streams draining this forest rise from the northern part of the forest. Notable among the rivers are Oni, Oluwa, and Ominla. The rainy season in the reserves occurs from March till November while the dry season, is from December till February. Annual rainfall ranges from 1700 to 2200 mm. Annual mean temperature in Oluwa is 26 °C. Soils are predominantly ferruginous tropical, typical of the variety found in intensively weathered areas of basement complex formations in the rainforest zone of south-western Nigeria. The soils are well-drained, mature, red, stony and gravely in upper parts of the sequence. The texture of topsoil in the reserves is mainly sandy loam (Onyekwelu et al., 2008; Adeduntan, 2009). The natural vegetation of the area is tropical rainforest characterized by emergent with

multiple canopies and lianas. Some of the most commonly found trees in the area include *Melicia excelsa, Afzelia bipindensis, Antiaris africana, Brachystegia nigerica, Lophira alata, Lovoa trichiliodes, Terminalia ivorensis, Terminalia superba,* and *Triplochiton scleroxylon*. However, the natural vegetation of the area except for the areas devoted to forest reserve has now been reduced to secondary regrowth forest thickets and fallow regrowth at varying stages of development or replaced by perennial and annual crops (Osunade, 1991).

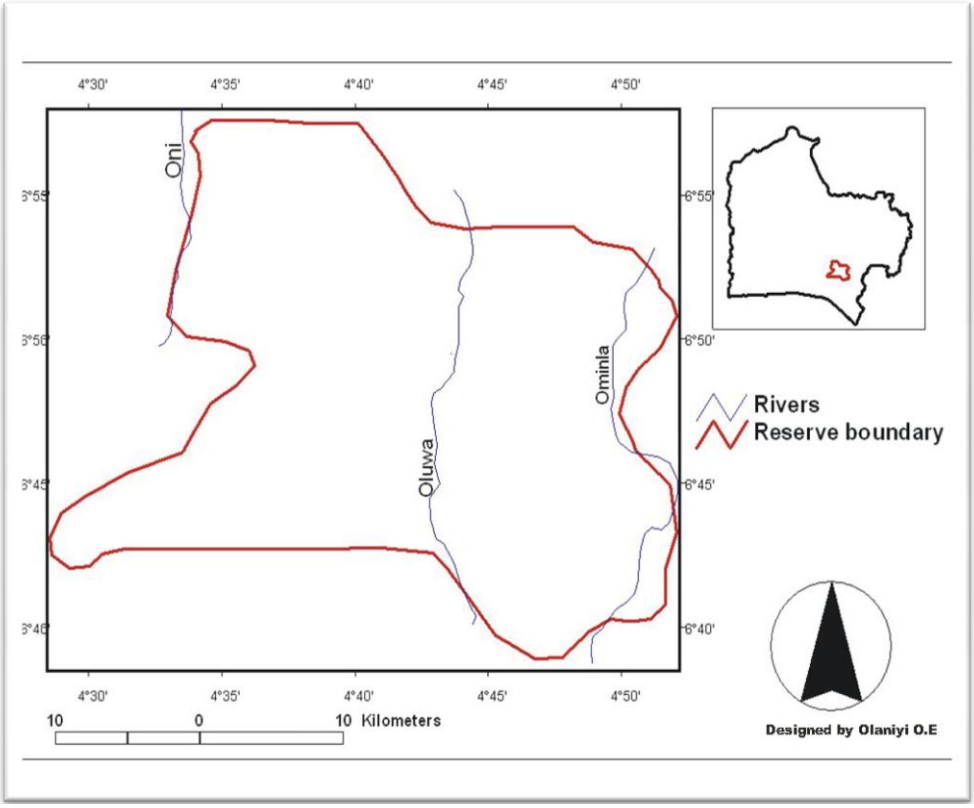

Figure 1. Location of Oluwa Forest Reserve in Southwestern Nigeria

2.2. Data collection

From October 2010, we monitored the situation of chimpanzees of Oluwa forest after the completion of a survey on the primates of Omo-Shasha-Oluwa Forest Complex commissioned by The Nigerian Conservation Foundation. This monitoring culminated on a new survey solely devoted to chimpanzees of the forest in the wet season of 2011 and early dry season of 2012.

mH mlHpmkkwuj vi wvHwHzmkkmH z mHvlHO Hu i xx voHwHmmzu vmKp u xi v mmHtwki ww HvHWt iH Forest Reserve. We walked along the path of least resistance across the remote area of the forest, through forest types using human and animal trails, and up water-courses. We collected information on chimpanzee presence through indirect observation of fresh Chimpanzee signs such as nest, and tracks as well as vocalization. Our survey lasted two weeks consecutively in both rainy and dry seasons. We undertook rainy season surveys in September and October, 2011 while the dry season surveys took place in January and February, 2012. We monitored carefully the calls of chimpanzees late in the evening and followed it at dawn in order to observe their nesting sites and possibly make direct counts on the animals. Thus, our observations were made from dusk to dawn in the two weeks of the studies in each season. We spent an average of 13hrs research efforts each day of enumeration. This is made up of six hours of recce walk (7am 1pm), four hours of monitoring calls (3pm 7pm) and three hours of activity monitoring at dawn (2am 5am). We followed this schedule strictly for both seasons except on heavy raining days in wet season. We planned these activities to fall on second half of the respective lunar months in order to aid visibility at dawn.

2.3. Mapping

We used the MapInfo Professional 5.0 software to upload the tracks recorded on the Global positioning system (Model GPS Map 76C GARMIN) and the ArcView 3.2a Global Information System to pictorially represent the acquired ground-truth data to depict the distribution of the Chimpanzee in the forest.

3. Results

Chimpanzee distribution was confined to the central portion of the OA2 region of the Oluwa Forest Reserve. This portion is approximately 39.22km^2 representing 5.78% of the total area of the original size of the forest reserve (Figure 2). Regular chimpanzee activities were, however, observed in much smaller portion of 9.80 km^2 at the western bank of River Oluwa.

Six occurrences of Chimpanzee were indirectly observed during the rainy season as shown in Table 1. These took place mostly in the afternoon with most of the indices observed within the vegetation type of thicket and secondary forest. Vocalizations and footprint were observed five times and once respectively. Likewise, twelve occurrences of Chimpanzee were observed both directly and indirectly during the dry season as shown in Table 2. Four sightings of Chimpanzee groups were achieved at different times with an average of 9.50 ± 1.55 individuals observed. A solitary Alpha male was also sighted ones during the survey. Direct sightings were achieved within two vegetation types, namely secondary forest and abandoned Palm tree plantation. Most of the animals directly sighted were traced through their early vocalization at dawn. One footprint was observed.

A total of 13 nests were observed built on trees throughout the survey. This is made up of four in the rainy season and nine in the dry season. Nests built on rock platform were observed, but it was almost impossible to count them because of the challenging terrain where they were built. The numbers of tree nests observed

at sleeping sites of these animals are usually fewer than the number of animal fleeing the sites as soon as they notice the approach of human at dawns. Some of the animals were seen in crouching posture on the rocky platforms in their sleeping sites. These locations were usually not far from the bank of Oluwa River on the rugged steep slope of the rocky formations dotting the forest.

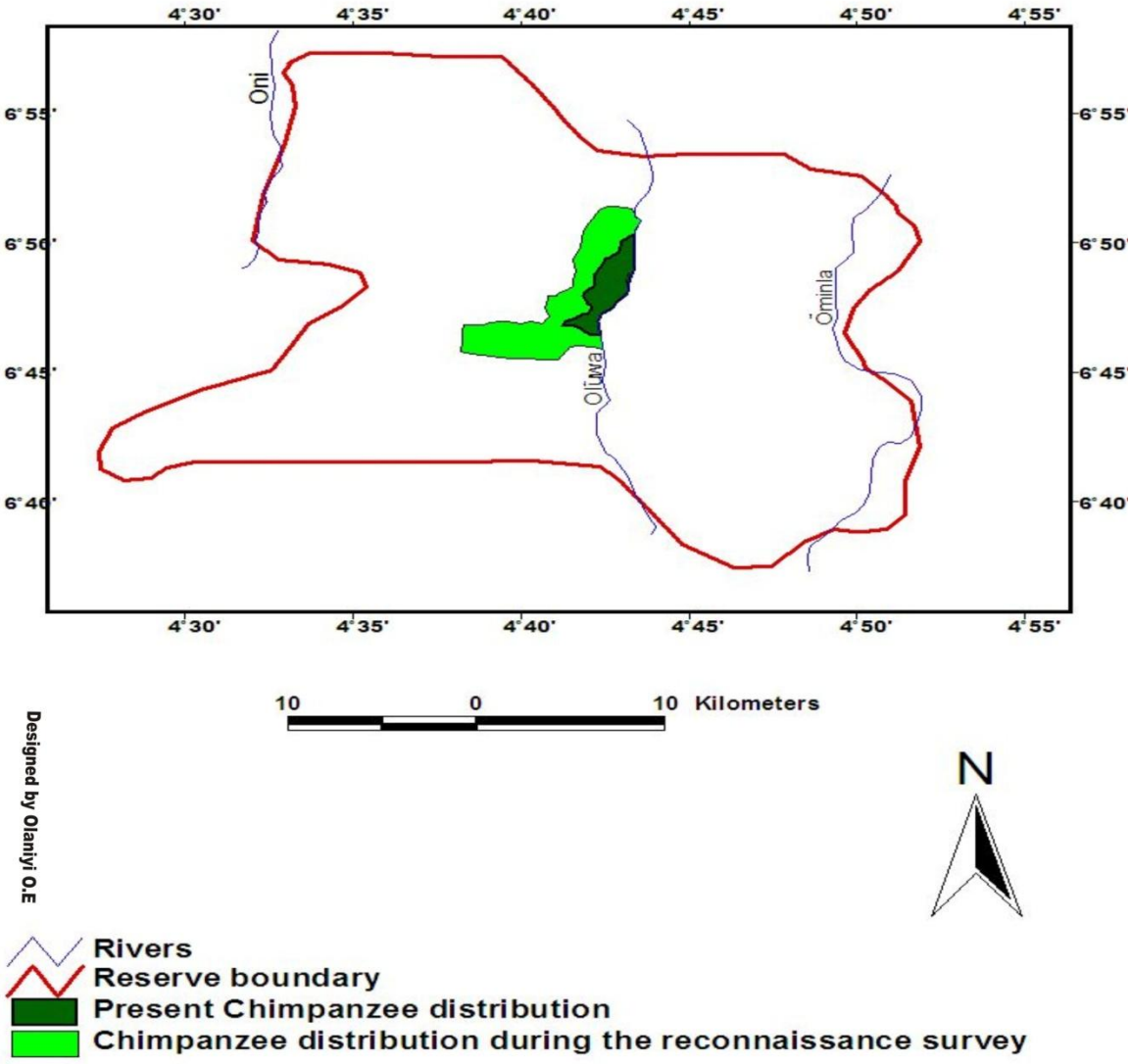

Figure 2. The area of current chimpanzee distribution in Oluwa Forest Reserve

Table 1. Data of Chimpanzee observed during the rainy season

Locations (GPS Coordinates)	No. of nest groups encountered	Direct sightings/ other signs	Vocalization	Vegetation type	Time sighted/ Dates
N06.82113º, E004.71546º		-	√	Thicket, secondary closed forest	1:57pm (30/09/11)
N06.80948º, E004.71048º		Footprints	√	Thicket, secondary forest	11:31am (01/10/11)
N06.81283º, E004.71594º		-	√	Thicket, secondary forest	1:21pm (01/10/11)
N06.83419º, E004.72123º		-	√	Secondary forest	1:32pm (02/10/11)
N06.79653º, E004.70317º		-	√	Secondary forest	2:43pm (04/10/11)

4. Discussion

4.1. Distribution of chimpanzees of Oluwa Forest Reserve

The lack of accurate information on the population of Chimpanzee is a cause for concern for conservation and management of the species in southwest Nigeria. That chimpanzees inhabit Oluwa Forest is not in doubt (Ogunjemite et al., 2006; Oates et al., 2008; Greengrass, 2009). However, there were no specific information regarding the actual, core distribution and population size of the Chimpanzee in Oluwa Forest Reserve. This work has shown that the remaining population of Chimpanzee in the forest are confined within the OA2 segment of the forest at the western bank of River Oluwa (Figure 2). This portion of the reserve contains the remaining blocks of less disturbed secondary forest, although the rate of human encroachment is becoming alarming (Olaniyi, 2012). Oluwa Forest Reserve is made up of three axis of OA1, OA2 and OA3. OA1 was converted to monoculture plantation of *Tectonia grandis, Gmelina arborea* and *Pinus strata*. Currently, the plantation is being harvested and the rate of disturbance is greater than obtained in the area of natural forest, thus proving even more difficult to inhabit by the chimpanzee. The OA3 axis had been taking up completely

for farming activities thus supporting the view expressed by Ogunjemite et al, (2006) that policing large forest reserve is traditionally difficult in Nigeria. The OA2 portion is also under pressure to be converted to farm lands but there still exist some portion under natural forest and these are the area currently subsisting chimpanzees in the reserve. In the 2010 primate survey for the Nigerian Conservation Foundation, an estimated 318.86km^2 forested areas were computed not to be under some form of cultivation in the reserve out of the total area of 678.06km^2 of the reserve. However, at the beginning of this survey in August 2011, the portion was reduced to an estimated 39.22 km^2. This is the real course of concern that no natural forest may remain for the preservation of this species in a location adjudged to be an exception site for it conservation in the region. Where then is the hope for the continued existence of the animal in Southwest Nigeria?

Table 2. Data of Chimpanzee observed during the dry season

Locations (GPS Coordinates)	No. of nest groups encountered	Direct sightings/ other signs	Vocalization	Vegetation type	Time sighted/ Dates
N06.83510º, E004.72282º	1	1 Footprints	√	Secondary forest	2:20pm (8/02/12)
N06.80040º, E004.69974º		14	√	Abandoned Palm tree plantation	11:06am (9/02/12)
N06.83454º, E004.72532º		7	-	Secondary forest	3.41am (8/02/12)
N06.83419º, E004.72123º		-	√	Secondary forest	1:37pm
N06.83413º, E004.72126º		9	√	Secondary forest	10.17am (11/02/12)
		8	√	Farmland	3:10pm (24/02/12)

4.2. Kpuxivmm Hmv Hm uimHvlHj vlivkm

An accurate and appropriate evaluation of the status of threatened and endangered species population is important to conservation decision (Ogunjemite, 2010). A clearer indication of the extent of depletion in chimpanzee population in the region is necessary. Four direct sightings of chimpanzees were achieved in this study. Their nests and footprints were observed, and their vocalizations heard. These were not enough to compute estimates of population in the forest, but a definite prove that certain numbers of the animal were present. The study recorded an estimated 9.50 ± 1.55 individuals excluding the lonely alpha male from the area of distribution of chimpanzee in the reserve. Although it was difficult to produce a density estimate in the work, Teleki (1989) observed that the crude density estimates of the intensive studied sites run from a twH9Hkpuxivmm HwHHpopH Hkpuxivmm Hsu^{-2} with most localities supporting an average density of less than 1.0. Greengrass (2009) did not give any figure on the estimated density of the Chimpanzee in Oluwa Forest Reserve but (Ogunjemite et al., 2006) calculated density of 0.15 Km^{-2} in relation to the total area of the reserve and by implication, the forest was serving as a veritable reservoir of the animal in the region. With this reduced and highly restricted distribution, it signifies that the estimated number of individual chimpanzees with the forest had greatly reduced.

4.3. Nesting and sleeping sites

Nest building is a basic characteristic of all great apes, including chimpanzees. Individual chimpanzees build a night sleeping nest daily and this is usually on tree platforms. However, the chimpanzees of Oluwa forest appear to be deviating from this basic behavioral characteristic probably because the environments of their night sleeping sites were insecured and lacking in essential resource for building nest. Their choice of sleeping site in the forest is now confined to the hilly and rocky terrain in areas of difficult accessibility within the forest along the river courses. Only one or two nests were built on the tree platform at daily sleeping sites probably for policing to watch and give signs to others at the least signs of intruders. The nests were usually made by cutting branches and placing it on the rock while the animal takes crouching or a squatting position, thus building their nests on rock platform that could be equated to ground nesting of the gorilla. The absences of tree species that are characteristically used for nesting are conspicuously from such locations. It may therefore be inferred that new nesting behavior is gradually been evolved in the chimpanzee populations in Oluwa Forest Reserve largely on account of insecurity and deprivation of essential materials from the environment of the animal. Arijesuyo (2011) observed that the patterns of behavior were to great extent influenced by the prevailing circumstances in the society: in this case, the night sleeping sites of the chimpanzee of Oluwa forest. Quoting from Sarojimi (2007) he argued further that to biologist and environmentalist, this concept is by far the rule of nature, which visualizes the concept of variation in species and evolution of new types of behavior in organisms as a reaction to extreme changes in their immediate environment. This proposition fits into a conceptual frame work of psycho-infrastructuralism model (Fig 4) developed by Uguru-Okorie (2001) that the understanding and control of behavior rests on possible regulation of relevant environmental factors, to regulate actions and patterns of behavior. It is further asserted that, environmental manipulation not only has the potential of determining

the forms of immediate behavioral expression, but could also produce in individuals the internalization of the dictates of the environment. This new way of crouching or squatting on bare rock surfaces at night by chimpanzees of Oluwa forest may be expressed in terms of responses to the threatened environment of the animals in the forest. The absence of essential nesting material where the animal could be safe from the threat may have therefore coffered on them this new behavior.

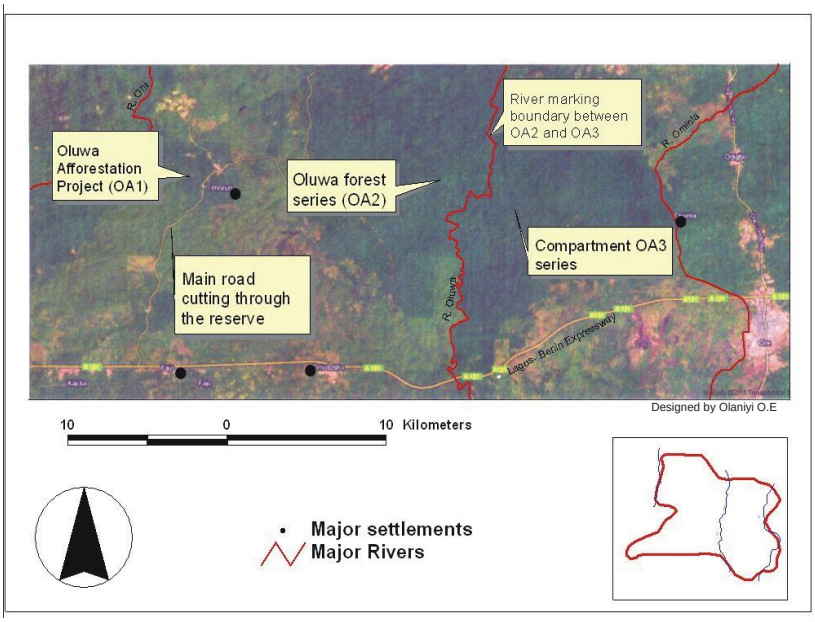

Figure 3. Satellite imagery of Oluwa Forest Reserve showing the three forest block components

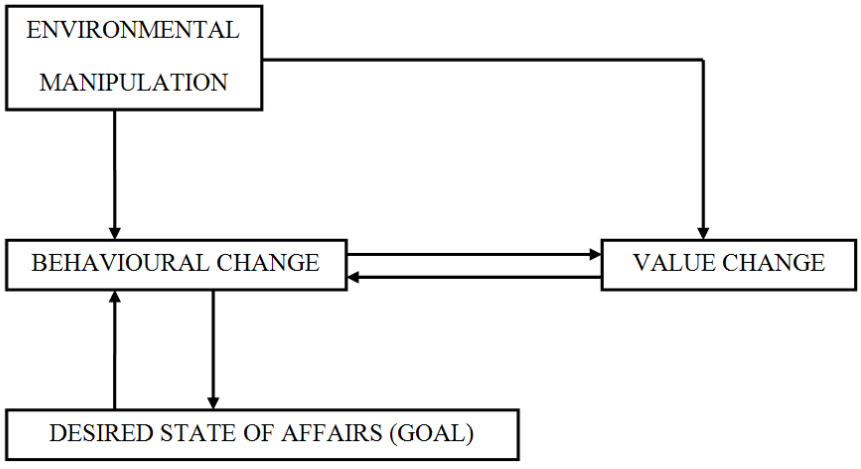

Figure 4. Psycho-infracstructural model of response to environmental changes developed by Uguru-Okorie (2001)

5. Conclusion and recommendations

The comparison of the present distribution of Chimpanzee mapped out in this study to the total area of Oluwa Forest Reserve really reveals the high rate of habitat degradation and urgent needs of finding appropriate conservation measures in restoring the hope of the survival of these animals the reserve. Although it is difficult to establish categorically the number of chimpanzees in Oluwa forest, this study identified specific group with a known number in defined geographical location within the forest and thus providing bases for planning conservation strategy for the animal in the study area. New nesting behavior had also been noticed in the chimpanzees of Oluwa Forest, largely on account of insecurity and deprivation of essential material necessary for nesting in their night sleeping sites and this may be explained on the conceptual frame work of psycho-infrastructuralism model. It is recommended that quick interventions should be initiated in the currently mapped out distribution area of Chimpanzee within the OA2 component of the forest and be gazetted as a Wildlife Sanctuary. This will resolve the conflicting land-use objective of timber extraction, conversion of forest to plantation in Forest Reserve to that of sustainable conservation of both flora and fauna resources. The awareness on the conservation of Chimpanzee should commence immediately among the subjoining communities to this intact, proposed Wildlife Santuary. More researches should be done on the Chimpanzee populations of Oluwa Forest Reserve to monitor the population trends and confirm the behavioral patterns of the animal.

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